

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTY DOCKET : RM.WSM
APPLICANT(S) : Badr, et al.
SERIAL NO. : 10/523,743
FILED : November 14, 2005
INT'L S.N. : PCT/US2003/024188
INT'L FILED : 01 August 2003
FOR : System for Diagnosing and Treating Sleep Apnea



Examiner:
Christian Yongkyun Chang

Art Unit: 3735
Conf. No.: 7945

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING

The undersigned hereby certifies that this document has been forwarded via first class, postage prepaid mail to Mail Stop Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 on September 12, 2008.

Raphael A. Monsanto

RAPHAEL A. MONSANTO, REG. NO. 28,448

INFORMATION DISCLOSURE STATEMENT

In compliance with the duty of disclosure according to 37 C.F.R. §1.56, §1.97, and §1.98, Applicants present herein prior art references which are believed at this time to be relevant to the subject matter of the instant patent application. A copy of the foreign reference, as listed in the annexed PTO/SB/08a form, is enclosed.

US 4 802 492 A (GRUNSTEIN MICHAEL M) - 7 February 1989 (1989-02-07)

Relevant portion: column 5, line 1-39

Asserted by the Examiner in the ISA to be relevant to claims 1 and 2

US 5 617 846 A (GRAETZ BERND ET AL) - 8 April 1997 (1997-04-08)

Relevant portion: the whole document

Asserted by the Examiner in the ISA to be relevant only generally to the state of the art of claims 1-34

US 6 142 952 A (BEHBEHANI KHOSROW ET AL) - 7 November 2000 (2000-11-07)

Relevant portion: column 2, line 38 to column 3, line 64

Asserted by the Examiner in the ISA to be relevant to claim 8

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GB 2 077 444 A (DRAEGERWERK AG) - 16 December 1981 (1981-12-16)

Relevant portion: page 1, line 35 to page 2, line 24

Asserted by the Examiner in the ISA to be relevant to claims 1 and 2, and only generally to the state of the art of claims 3-34

None of the references discussed herein teach or suggest the invention claimed in the subject patent application. More specifically, the known systems, whether viewed individually or in combination with one another, do not suggest the claimed method of measuring upper airway resistance of a human patient, comprising the steps of:

- obtaining air pressure data from an air pressure data signal corresponding to a plurality of breathing cycles while the human patient is asleep;

- obtaining air flow data from an air flow data signal corresponding to the plurality of breathing cycles while the human patient is asleep;

- transferring the air pressure data and the air flow data to a processor;

- storing the air pressure data and the air flow data in respective correlated storage regions of a matrix program system of the processor;

- segregating the air pressure data and the air flow data in the matrix program of the processor into corresponding breathing cycles of the human patient;

- computing normalized air pressure data to achieve a predetermined normalized air pressure value to correspond with a predetermined point for each breathing cycle of the human patient;

- producing a correlation of the air flow data against normalized air pressure data;

- curve-fitting onto the correlation of the air flow data against normalized air pressure data a curve corresponding to a predetermined multiple term mathematical function, the predetermined multiple term mathematical function is a quadratic function, $F(P) = AP^2 + BP + C$, where A, B, and C are coefficients;

- computing the value of the coefficients of the predetermined multiple term mathematical function; and

- computing the derivative of the predetermined multiple term mathematical function; and

- computing a resistance corresponding to the reciprocal of coefficient C, whereby

$$\text{Resistance} = 1/C.$$

In addition, the known systems, whether viewed individually or in combination with one another, do not suggest the claimed method of determining a flow-limiting characteristic of the upper airway of a human patient, comprising the steps of:

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obtaining air pressure data from an air pressure data signal corresponding to a plurality of breathing cycles while the human patient is asleep;

obtaining air flow data from an air flow data signal corresponding to the plurality of breathing cycles while the human patient is asleep;

transferring the air pressure data and the air flow data to a processor;

storing the air pressure data and the air flow data in respective correlated storage regions of a matrix program system of the processor;

segregating the air pressure data and the air flow data in the matrix program of the processor into corresponding breathing cycles of the human patient;

computing normalized air pressure data to achieve a predetermined normalized air pressure value to correspond with a predetermined point for each breathing cycle of the human patient; and

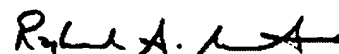
computing the flow-limiting characteristic of the upper airway of a human patient as a function of normalized air pressure data divided by corresponding air flow data;

wherein each breathing cycle of the human patient is determined in relation to the predetermined point thereof corresponding to the predetermined normalized air pressure value.

The Commissioner is authorized to charge the fee attendant to filing this Information Disclosure Statement pursuant to 37 C.F.R. § 1.97(c)(2) (\$180), or as required, to the Rohm & Monsanto, P.L.C., Deposit Account No. 50-0720.

In view of the foregoing, it is respectfully requested that the Examiner examine the present application, allow the claims, and pass the application for issue. If the Examiner believes that the prosecution of this case can be expedited by a telephone interview, the Examiner is requested to call the undersigned attorney at the telephone number indicated hereinbelow.

Respectfully submitted,



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obtaining air pressure data from an air pressure data signal corresponding to a plurality of breathing cycles while the human patient is asleep;

obtaining air flow data from an air flow data signal corresponding to the plurality of breathing cycles while the human patient is asleep;

transferring the air pressure data and the air flow data to a processor;

storing the air pressure data and the air flow data in respective correlated storage regions of a matrix program system of the processor;

segregating the air pressure data and the air flow data in the matrix program of the processor into corresponding breathing cycles of the human patient;

computing normalized air pressure data to achieve a predetermined normalized air pressure value to correspond with a predetermined point for each breathing cycle of the human patient; and

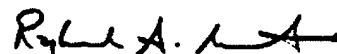
computing the flow-limiting characteristic of the upper airway of a human patient as a function of normalized air pressure data divided by corresponding air flow data;

wherein each breathing cycle of the human patient is determined in relation to the predetermined point thereof corresponding to the predetermined normalized air pressure value.

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